

Work Order ID 79516

January-26-12 4:07:19 PM

79516

Page 1

Item ID: D2741 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Blade, 350 Skidtube
 Start Date: 26/01/2012 Start Qty: 40.00 ***40*** Cust Item ID:
 Required Date: 09/02/2012 Req'd Qty: 40.00 ***40*** Customer:
 Reference:

Approvals: Process Plan: M.L.J Date: 12/01/23 Tooling: Date: Run Start ***NR1***
 QC: Date: SPC (Y/N): Date: Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D2741	Rev C								
100		0.00							
100	BAND SAW								
Bandsaw	Memo	0.00							
Jeaspa Bandsaw	Cut blanks 13.850" long +0.063" -0.000"								
110		0.00							
110	HAAS CNC VERTICAL MACHINING #1								
HAAS 1	Memo	0.00							
HAAS CNC vertical machine #1	1-Machine per folio FA108								
120		0.00							
120	QC2- Inspect parts off machine FAI/FAIB								
QC	Memo	0.00							
Quality Control									

Handwritten notes:
 12/02/03 40
 12/02/05
 12-02-05
 (P40)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D 2741 PAR #: _____ Fault Category: Machining NCR: Yes No DQA: ~~Not~~ Date: 12/04/04
 Resolution: Scrap Disposition: Scrap QA: N/C Closed: ✓ Date: 12/4/4

NCR:		WORK ORDER NON-CONFORMANCE (NCR) <u>69.40</u>						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
12-02-05	110	X axis off by .080" instead of removing excess mat'l, tool cut into part R.C. operator error (in training) Qty x 1	<u>S</u> 12/02/06 257042	Scrap & replace B M119269 re-set X axis re-train employee	<u>RT</u> 12-02-05	<u>S</u> 12/02/06	<u>S</u> 12/02/06 257042	<u>S</u> 12/02/06

NOTE: Date & initial all entries

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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130 *130* QC Quality Control	QC8- Inspect parts - second check Memo	0.00 0.00		B.A 12/02/08		40	0		
140 *140* Small Fab Small Fab	Small Fab Memo 1-Deburr2-Bend per Dwg D2741	0.00 0.00		SB 12/08/09		(40)			
150 *150* QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.00		S 12/8/10		40			

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
160 *160* Outsource1	Outsource process - Heat Treat	0.00							
	Memo	0.00							
	Outsource process - Heat Treat								
	Issue P/O: <u>16/70</u> Harden material as per Dwg D2741Min. Ultimate Tensile Strength = 152 ksi (34-40 HRC)Min. Yield Tensile Strength = 141 ksiTest report or Certification required Sand blast parts								
170 *170* Packaging	Receive & Inspect for Damage & Mat'l Certs	0.00							
	Memo	0.00							
	Packaging								
	Ensure Test report or Certification attached								
180 *180* QC	QC5- Inspect part completeness to step on W/O	0.00							
	Memo	0.00							
	Quality Control								

CL 12/02/10 (40)

6/23/7 (40)

conts
(40)

8/26/09

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
190 *190* Small Fab	Small Fab	0.00							
Small Fab	Memo	0.00							
Small Fab	1-Pass in deburring machine2-Grind off edges	0.00							
195 *195* HandFinish	HandFinish	0.00							
Hand Finishing	Memo	0.00							
	clean with wash & wipe to remove oil								
200 *200* Powdercoat	White Gloss(Ref:4.3.5.2) per QSI005 4.3-Steel	0.00							
Powder Coating	Memo	0.00							
	START TIME: 7h30								
	FINISH TIME: 9h00								
	OVEN TEMPERATURE: 400°F								

40 x 10 M/L 12/03/26

40 x 10 (AP) 12/03/28

m120222

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
210	QC3- Inspect Part Finish	0.00							
210									
QC	Memo	0.00							
Quality Control									
220	Identify as per dwg & Stock Location: <u>466</u>	0.00							
220									
Packaging	Memo	0.00							
Packaging									
230	QC21- Final Inspection - Work Order Release	0.00							
230									
QC	Memo	0.00							
Quality Control									

40 BR 12-3-28

JB (40) 12/03/30

12/4/2 CL 12/03/30

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

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Page 1

Work Order ID: 79516

79516

Parent Item: D2741

D2741

Parent Item Name: Blade, 350 Skidtube

Start Date: 26/01/2012

Required Date: 09/02/2012

Start Qty: 40.00

Required Qty: 40.00

Comments:

IPP Rev: D00.11.15Removed P/O turning - in house processEC

IPP Rev: E 06-03-20 As Per Rev C

JLM

IPP Rev: F 06.04.20Added grinding after heat treating EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
M4130NB0.500X03.00 0		Purchased		No		100	f	62.7200	1.1541	48.59368			

M4130NB0 500X03 000

**

4130 Bar 0.500 x 3.00

Location

Loc Qty

Loc Code

MAT034

62.72

118585

12.09

119269

50.63

48.6 mk 12/02/03

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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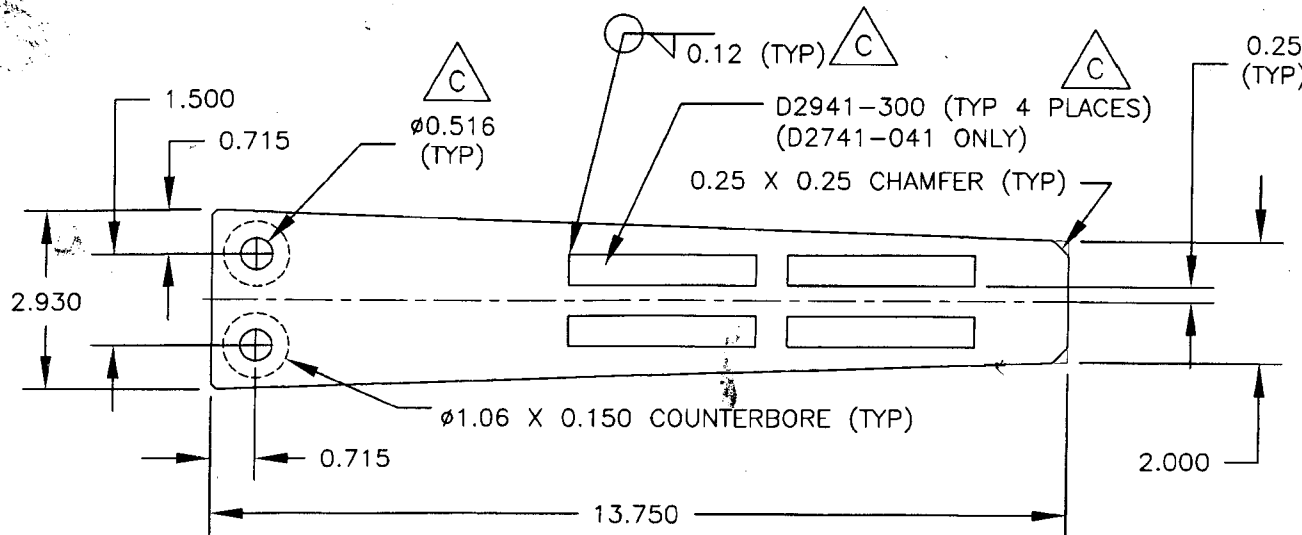
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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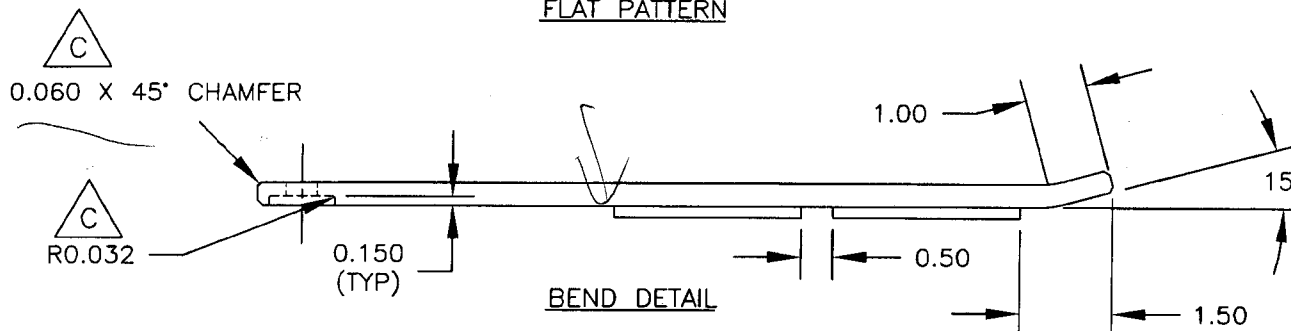
NOTE: Date & initial all entries

DART

RELEASED
06-02-07



FLAT PATTERN



BEND DETAIL

NO COPY
RETURN TO
ENGINEERING
ON CONTROLLED COPY
NOT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 79516-425
12/01/27

D2741 BLADE

- 1) MATERIAL: AISI 4130 STEEL 0.375 THICK
MIN. ULTIMATE TENSILE STRENGTH = 152 ksi (34-40 HRC)
MIN. YIELD TENSILE STRENGTH = 141 ksi
- 2) FINISH: POWDER COAT WHITE (REF. 4.3.5.2) PER DART QSI 005 4.3
- 3) ALL DIMENSIONS ARE IN INCHES
- 4) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 5) BREAK ALL SHARP EDGES 0.030 TO 0.060
- 6) TO MAKE D2741-041, WELD D2941-300 (4) AS SHOWN ABOVE.
REMOVE POWDER COAT FROM SURFACE OF D2941-300
- 7) TO MAKE D2741-043, WELD 7560 HARDCOAT ROD INSTEAD OF D2941-300

DESIGN	DRAWN BY	DART AEROSPACE USA, INC.	PORT HADLOCK, WA	REV. C
CHECKED <i>PH</i>	APPROVED <i>PH</i>	DRAWING NO. D2741	SHEET 1 OF 1	
DATE 06.01.12		TITLE BLADE	SCALE 1:3	
A	98.04.16	NEW ISSUE		
B	98.09.01	CHANGE C'SINK TO C'BORE		
C	06.01.12	LARGER HOLE, ADD RADIUS AND CHAMFER ADD -041/-043 OPTIONS		

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID PO16170

Purchase Order Date 2/10/12

PO Print Date 2/10/12

Page Number 1 of 1

Order From :

VC-MET004

METCOR INC.
560 BOUL. ARTHUR SAUVE
SAINT-EUSTACHE, QC J7R 5A8
CA

Contact Name

Vendor Phone

450 473 1884

Vendor Fax

450 491 5498

Vendor Account Nbr

Buyer

Chantal Lavoie

Requisition Nbr

10127-2607

Tax Resale Nbr

Net 30

Terms

Currency

CAD

FOB

Destination-Collect

Ship To :

DART AEROSPACE LTD

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

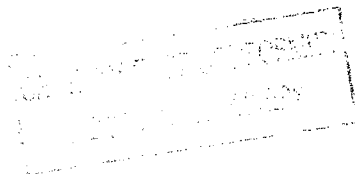
CL 2/10/12

Line Nbr	Reference Revision ID Vendor Part Number	Description/ Mfg ID	Req Date/ Taxable	Req Qty/ Unit of Measure	Ship Method	Unit Price	Extended Price
1	79516	D2741 BLADE	2/24/12 Yes	40.00	FedEx PI collect	\$10.3000	\$412.00

Special Inst: HARDEN MATERIAL AS PER DWG
D2741
MINIMUM ULTIMATE TENSILE
STRENGTH = 152 KSI
MINIMUM YIELD TENSILE STRENGTH
= 141 KSI
(34-40 HRC)
NOTE: PLEASE SAND BLAST PART
AFTER HEAT TREAT

PO Total:

\$412.00



Change Nbr: 1

Change Date: 2/10/12

No substitution or deviation without
consent.
Certificate of Conformity or Material
Certification required when applicable

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ
ST-EUSTACHE, QC, J7R 5A8

Tel: 450-473-1884 / Fax: 450-491-5498

Certificat de Conformité Détaillé

Detailed Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
173593	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

COMMANDE DU CLIENT customer po	BON DE LIVRAISON DU CLIENT customer shipper no.	MATÉRIEL material	CODE DE TRAITEMENT mat'l heat code	NUMÉRO DE LOT lot number
PO16170		4130		

SPÉCIFICATIONS DU PROCÉDÉ processing specifications

SEL HARDEN

HARDEN AND TEMPER

SAE AMS 2759/1 REV.E

EXIGENCE / requirement	SPÉCIFICATIONS / specified	TESTS EXÉCUTÉS / performed	RÉSULTATS DE TESTS / results
HARDNESS	34 - 40 HRC	40	36 - 38 HRC
TENSILE (KSI)	152 - 182 KSI	8213/15	161 - 171 KSI

QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description
40	135	D2741 BLADE NOTE: SANDBLAST PART AFTER HEAT TREAT CONTENANT: 2 BOÎTES DE CARTON

Operation	Temp. spécifiée Specified Temp	Temps de trempage Spécifié Specified Soak Temp	Atmosphere	Carbone Carbon Potential	Q-Media Q-Temp	Four # Furnace #	Date Départ Start Date	Heure d'entrée Time In	Heure de sortie Time Out	Date Complétée Date complete
1,00 CONT. INIT.	LAVAGE		si nécessaire							
2,00 PREPARING	COMPTAGE									
3,00 PREHEAT 1	1000	1:00 1:30	air			134				
4,00 SEL HARDE	1575	0:40	SEL		BRINE	106				
5,00 WASH	150	0:30	soap							
6,00 SNAP TEMP	400	2:00	air			609				
7,00 SANDBLAS			Sablage							

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ
ST-EUSTACHE, QC, J7R 5A8

Tel: 450-473-1884 / Fax: 450-491-5498

Certificat de Conformité Détaillé

Detailed Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
173593	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

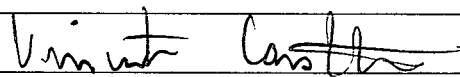
1

Operation	Temp. spécifiée Specified Temp	Temps de trempe Spécifié Specified Soak Temp	Atmosphere	Carbone Carbon Potential	Q-Media Q-Temp	Four # Furnace #	Date Départ Start Date	Heure d'entrée Time In	Heure de sortie Time Out	Date Complétée Date complete
8,00 DIST INSP										
9,00 TEMPER	875 +/-10°F	4 hrs	air			612				
10,00 HARDN INS										
11,00 SANDBLAS			Sablage							
12,00 HUILAGE			huile							
13,00 FINAL INSP							02-29-2012			02-29-2012

COMMENTAIRES / comments

ALL THE HEAT TREATMENT PROCESSING PERFORMED ON THIS ORDER WAS ACCOMPLISHED USING HEAT TREATMENT EQUIPMENT THAT MEETS THE REQUIREMENTS OF AMS 2759. ALL THE HEAT TREATMENT OPERATIONS WERE ACCOMPLISHED IN ACCORDANCE WITH THE REQUESTED/REQUIRED HEAT TREATMENT SPECIFICATION AND ALL REQUIRED VERIFICATIONS TEST HAVE BEEN PERFORMED AND DOCUMENTED. NO UNAUTHORIZED CHANGES OR DEVIATIONS TO REQUIRED HEAT TREATMENT SPECIFICATIONS OR PROCEDURES HAVE BEEN PERFORMED.

APPROUVÉ par / Approved by:



DATE: 2012-02-29

/ Nous certifions que toute l'information comprise sur ce rapport est exacte et conforme aux requis du client. / We certify that all the information on this report is exact and in accordance with the order requirements.